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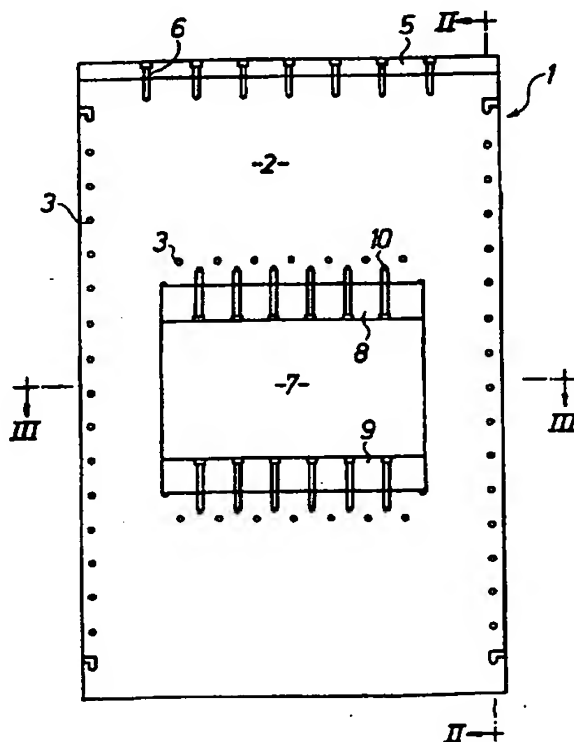
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(21) International Application Number: <b>PCT/SE97/01026</b> (22) International Filing Date: 12 June 1997 (12.06.97) (30) Priority Data: 9602349-4 14 June 1996 (14.06.96) SE (71) Applicant (for all designated States except US): <b>TAU POWER AB [SE/SE]; P.O. Box 186, S-244 21 Kävlinge (SE).</b> (72) Inventor; and (75) Inventor/Applicant (for US only): <b>PERSSON, Lars [SE/US]; 25 Arnold Terrace, Mablehead, MA 01945 (US).</b> (74) Agents: <b>HOLMQVIST, Lars, J., H. et al.; Albiñ Holmqvist AB, P.O. Box 4289, S-203 14 Malmö (SE).</b>	(81) Designated States: <b>AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</b>  <b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>	

(54) Title: **MACHINE FRAME**

(57) Abstract

The invention relates to a machine frame (2), e.g. hydraulic presses, and more specifically to frames of the type exhibiting vertical, parallel plates held together by connecting devices. According to the invention, the plates have through holes (3) and the fastening means comprise threaded rods, placed in said holes and holding said plates at definite distances from each other. Preferably, the threaded rods are fastened by means of nuts on both sides of the plates (2). The vertical plates may exhibit through recesses (7) for machinery, e.g. a hydraulic press. The invention teaches an arrangement enabling plates and connecting devices of standard types to be used, and eliminates the need for special spacer means between the plates to maintain a definite spacing between them.



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## INVENTION DENOMINATION: MACHINE FRAME

10 Field of the invention

The present invention relates to a frame for machines, e.g. hydraulic presses, and more specifically to frames of the type exhibiting vertical, parallel plates held together by connecting devices. The invention teaches an arrangement enabling plates and connecting devices of standard types to be used, and eliminates the need for special spacer means between the plates to maintain a definite spacing between them.

State of the art

It is, as such, previously known to utilise parallel, vertical plates in frames for various machines. The plates are held at suitable distances from each other with the aid of spacer means, or are placed against each other. The plates are held together by welds or by bolts and nuts. With this type of arrangement follows the problem of providing bolts of appropriate length and spacer means of appropriate thickness for each model of the frame. This entails disadvantages from a manufacturing aspect, as the different spacer means and bolts have to be manufactured and kept in stock.

The present invention solves the above problem by providing through holes in the vertical, parallel plates. Rods are provided through the holes, thereby holding the plates with the appropriate spacing, without the need for any dedicated spacer means. The distance between the plates can then be arbitrarily selected and the through rods may only have to be cut into shorter lengths if needed.

Summary of the invention

The present invention thus provides a machine frame, comprising vertical plates secured to each other by fastening means.

According to the invention, the plates have through holes, and the fastening means comprise threaded rods, placed in said holes and holding said plates at definite distances from each other by means of nuts, located on both sides of the plates.

The vertical plates may have through recesses for machinery, e.g. a hydraulic press.

The present invention is defined in detail by the accompanying claims.

5 **Brief description of the drawings**

The invention will be described in detail below, with reference to the accompanying drawings, of which

Fig. 1 is a vertical front view of an embodiment of the frame according to the  
10 present invention;

Fig. 2 is a cross-sectional view along the line II-II of Fig. 1;

Fig. 3 is a cross-section along the line III-III of Fig. 1; and

Fig. 4 is a horizontal top view of the frame.

15 **Detailed description of a preferred embodiment**

The present invention will be described below, with reference to its use in connection with a hydraulic press, but it will be appreciated that the invention may be used also for other types of machinery.

Hydraulic presses are used for the manufacture of numerous products and are  
20 of course needed in many different sizes. It would be advantageous if the various sizes could be constructed from components having a standardised shape, enabling the size to be varied by using a different number of components and by varying the distance between them.

With reference to the drawings, a frame 1 is shown, which is suitable for a  
25 hydraulic press. The actual machinery equipment for the hydraulic press, i.e. pressure cylinders, pressing dies, etc. are of conventional design and not shown in the drawings, for increased clarity in illustrating the idea of the invention. The frame 1 mainly comprises vertical and parallel plates 2. In the embodiment shown, the number of plates is five. The plates 2 have been provided with a number of  
30 through holes 3. Running through these holes 3 are threaded rods 4, of which only one rod 4 is shown in Fig. 2. The number of vertical plates 2 and threaded rods 4 may of course be varied as necessary.

The plates 2 are held at correct distances from each other by means of nuts 11, which are placed on both sides of each plate 2, and which are tightened to fix  
35 the plates in position. The distance between the plates can be easily adjusted by loosening the nuts and screwing them in one direction or the other to displace the plate located between them. In this manner, the distance between the plates 2 may be set completely arbitrarily.

A frame 1 according to the present invention can be constructed solely from  
40 these vertical plates and threaded rods. The latter will hold the plates at a definite

distance from each other, without requiring any spacer means between the plates. The distance between the plates may be varied arbitrarily.

In order to further stabilise the frame, and to fasten items of machinery, a horizontal top plate 5 may be attached to the upper side of the frame. The plate 5 is shown in a horizontal top view in Fig. 4. The top plate 5 may conveniently be fastened by screws 6, as shown in the drawings.

The frame may also be equipped with a bottom plate (not shown), which may be similar to the top plate 5 and fastened in a corresponding manner.

If the frame 1 according to the invention comprises only two vertical plates, the machinery may be arranged between them in a suitable manner. If more than two plates are included, it is however convenient for the vertical plates 2 to have through recesses 7 for housing the machinery. If the machinery consists of a hydraulic press, the frame preferably also includes an upper press table 8 and a lower press table 9 for fastening the hydraulic press (not shown). The press tables 8 and 9 are thereby provided with entrance holes for the hydraulic and other connectors of the hydraulic press. The press tables are fastened to the different plates with their respective screws 10.

The frame according to the invention is transported in a disassembled condition in order to require as little space as possible. The frame is subsequently assembled on location by raising the vertical plates, fixing them with suitable spacing and then fastening the threaded rods. Thereupon, if applicable, the top plate, the bottom plate and the press tables are mounted. Finally, the actual machinery is fitted and connected.

The present invention thus provides a machine frame with major advantages compared to the prior art. The frame is manufactured from a number of standardised components, i.e. vertical plates, threaded rods and, if necessary, top and bottom plates, which may be easily assembled in various ways for different applications. This will lower the manufacturing cost, as a smaller number of different parts has to be manufactured. Separate spacer means, for maintaining the distance between the plates, do not have to be manufactured at all. The frame according to the invention is also easy to transport in its disassembled state, which reduces the spatial needs. The machine frame is easy to assemble on location.

The invention has been described in detail with reference to a hydraulic press, but may also be used for other machinery. As has been mentioned above, and as is evident to the person skilled in the art, numerous modifications and variations may be applied without departing from the scope of the invention, as defined in the following claims.

## CLAIMS

1. Machine frame (1), comprising vertical plates secured to each other by  
5 fastening means, **characterized in** that the plates (2) have through holes (3), and  
that the fastening means comprise threaded rods (4), placed in said holes (3) and  
holding said plates (2) at definite distances from each other by means of nuts (11),  
located on both sides of the plates (2).
2. Machine frame according to claim 1, **characterised in** that a horizontal top  
10 plate (5) is attached to the top sides of the vertical plates (2).
3. Machine frame according to claim 1 or 2, **characterised in** that a horizon-  
tal bottom plate is attached to the bottom sides of the vertical plates.
4. Machine frame according to any one of the preceding claims, **character-**  
**ised in** that the vertical plates (2) have through recesses (7) for housing machinery.
- 15 5. Machine frame according to claim 4, **characterised in** that upper and  
lower press tables (8, 9) are attached to the upper and lower sides, respectively, of  
the recesses (7).
6. Machine frame according to any one of the preceding claims, **character-**  
**ised in** that connectors to the machinery are arranged in entrance holes in the press  
20 tables.
7. Machine frame according to any one of the preceding claims, **character-**  
**ised in** that the machinery is a hydraulic press.

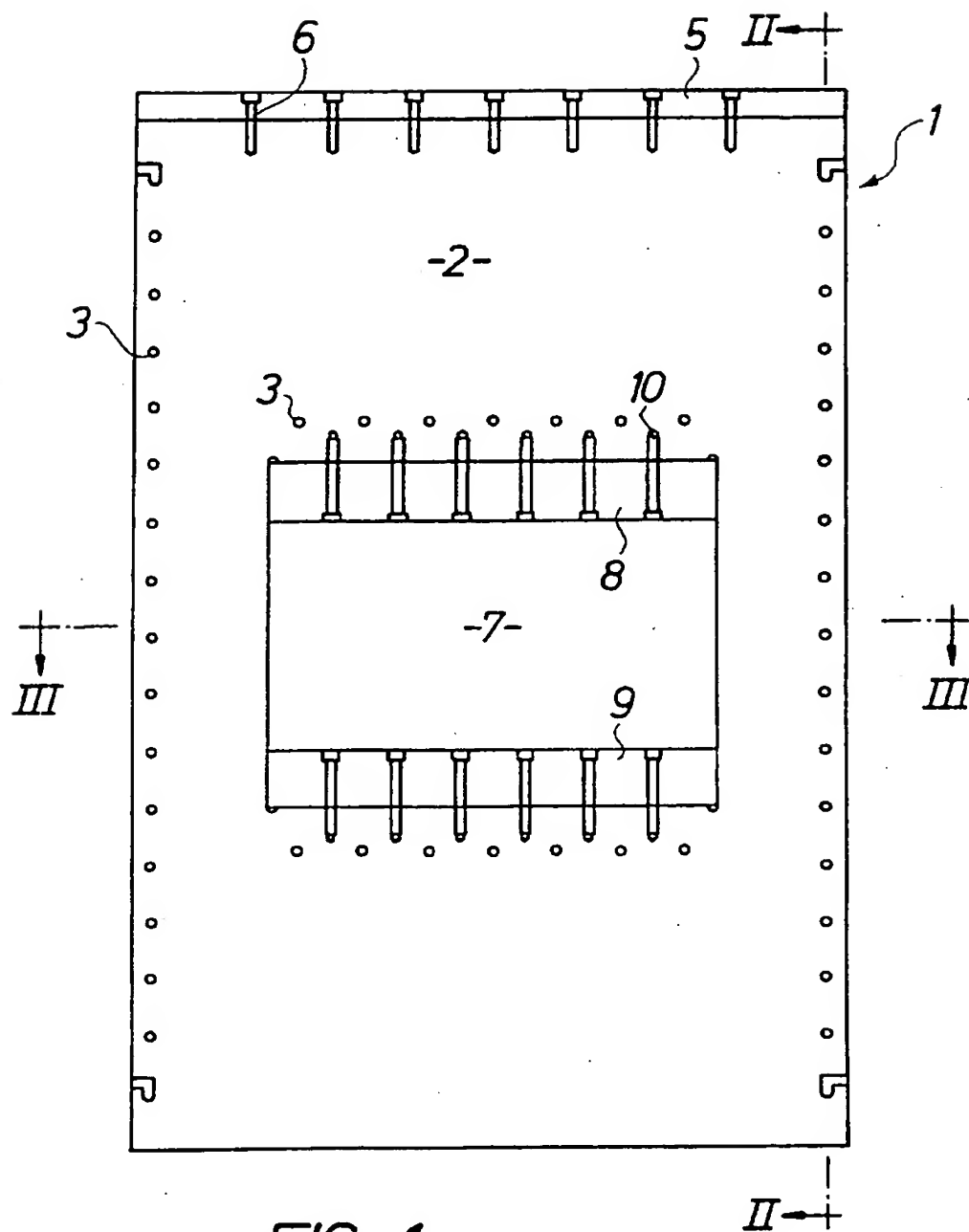


FIG. 1

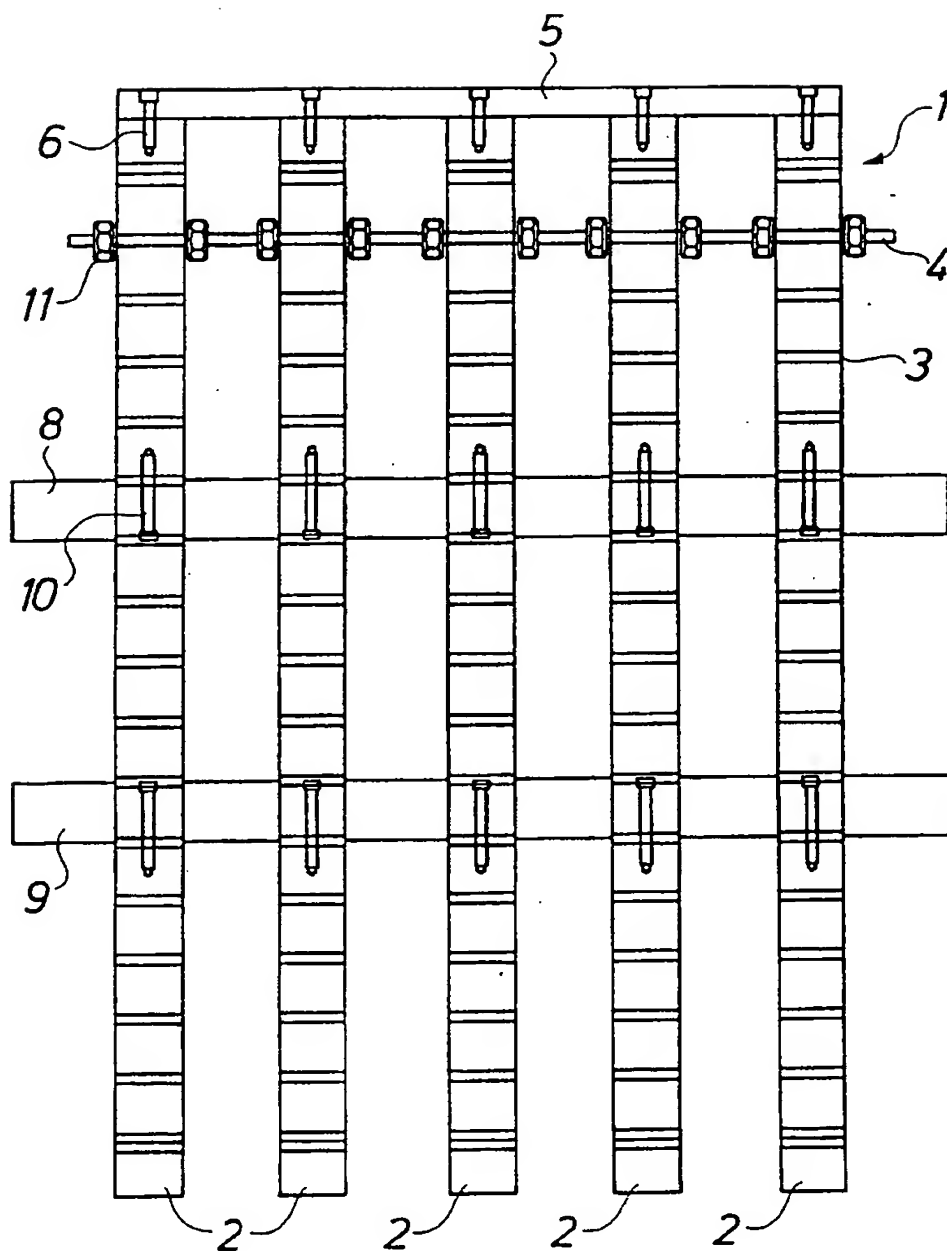


FIG. 2

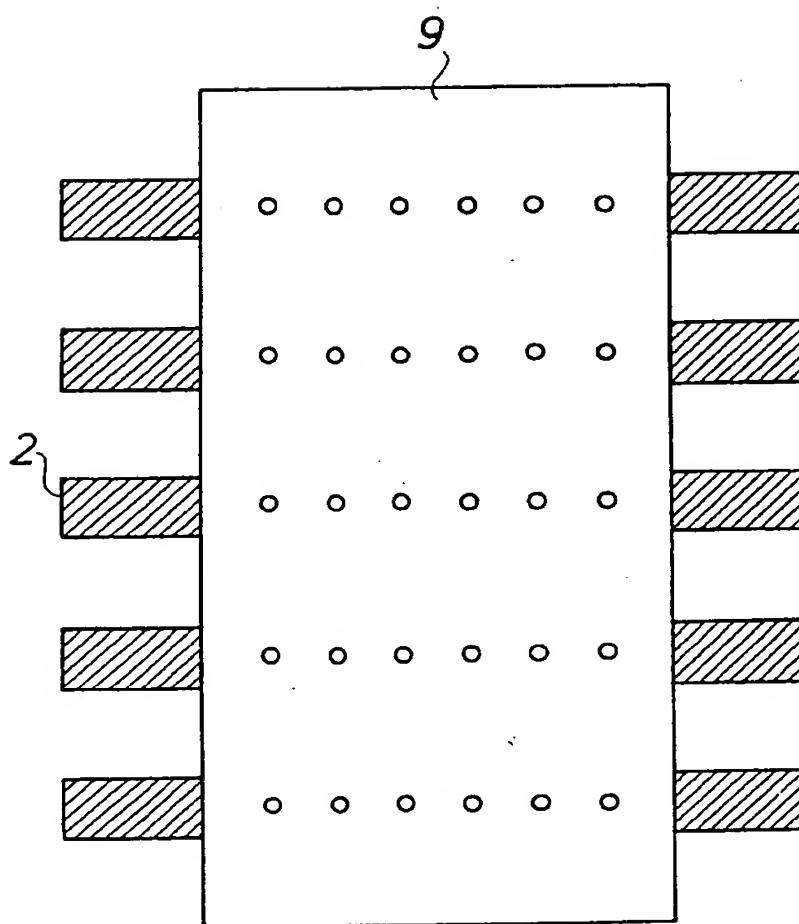


FIG. 3

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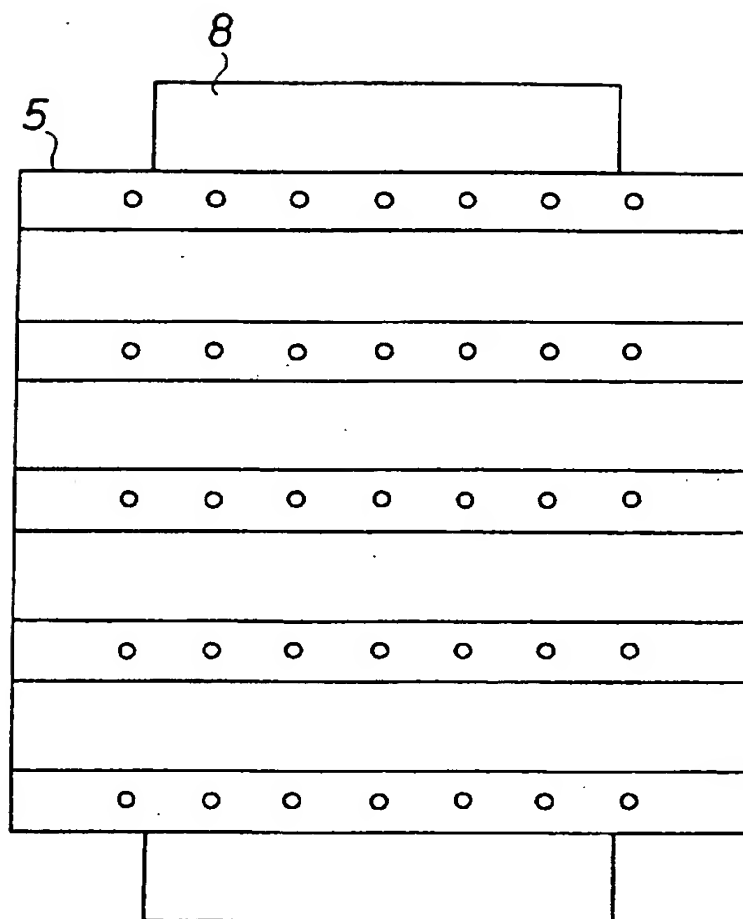


FIG. 4

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 97/01026

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: F16M 1/00 // F16M 5/00  
According to International Patent Classification (IPC) or to both national classification and IPC

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SE 355404 B (SVENSKA INDUSTRIETABLERINGS AB (SVETAB)), 16 April 1973 (16.04.73) --	1-3
X	DE 4326387 A1 (MAN ROLAND DRUCKMASCHINEN AG), 9 February 1995 (09.02.95) --	1-3
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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